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A syllabus of elementary lectures in psychology delivered in the University of Toronto. 1893.

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A SYLLABUS

OF ELEMENTARY

LECTURES IN PSYCHOLOGY

DELIVERED IN THE

UNIVERSITY OF TORONTO

BY

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PRICE, 25 CENTS.

TORONTO:
PRINTED BY ROWSELL & HUTCHISON.

1896.

A SYLLABUS

OF

ELEMENTARY LECTURES IN PSYCHOLOGY.

CHAPTER I.

Nature and Scope of Psychology.

1. All possible objects of human contemplation may be grouped as follows: (*a*) Material things; (*b*) Minds; (*c*) The Divine or Absolute Being.

2. The first group includes all the elements and forces of nature; those things which fall under the cognizance of the senses; and whose investigation is the special business of the physical sciences. These sciences may therefore be called *objective* or *cosmological.*

3. The second group includes all intelligence, wherever we find it. By intelligence is meant, that which feels and knows, as distinguished from that which is felt and known. The investigation of intelligence cannot be done directly by the senses, but is the work of consciousness itself. These studies are therefore *subjective* or *psychological.*

4. The third heading stands for that existence upon which all other existence depends. This absolute existence cannot be known by the senses, nor even by the ordinary intellectual powers, but must be apprehended in a high moral or spiritual intuition. Its study, therefore, is *transcendent* or *ontological.*

5. In accordance with this classification, human studies may be grouped, as regards their subject matter, into physical, mental, and theological sciences.

6. Psychology finds its place in this classification as *mental* science, or the investigation of intelligence.

CHAPTER II.

Relation of Psychology to Metaphysic.

1. But further, in each of these departments of study, the purpose of the investigator may be, either (*a*) to understand the *phenomena* of the thing (that is the properties by which the thing is manifested to our apprehension) or (*b*) to know the essential nature (noumenon) of the thing itself, to which the properties belong. The former is the scientific, the latter the metaphysical attitude.

2. Hence the following scheme :

Science (studying phenomena) is.....	physical / mental / theological	when investigating....	the world. / the soul. / the Deity.
Metaphysic (studying noumena) is...	cosmological / psychological / ontological	when investigating....	the world. / the soul. / the Absolute.

3. Psychology finds its place in this classification as mental *science*, or the study of the *phenomena* of intelligence.

CHAPTER III.

Relation of Psychology to other Sciences.

1. Psychology stands in a double relation to the other sciences; from one point of view it is co-ordinate with them, from another it takes precedence of them all.

2. It is co-ordinate with them, inasmuch as it, in common with them, deals only with *phenomena*, leaving the study of essential being to metaphysic.

3. It takes precedence of them all, inasmuch as it has to do with that which is the medium of all knowledge, and upon which, therefore, the possibility of all science depends.

CHAPTER IV.

Relation of Psychology to Physiology.

1. Psychology and physiology are closely related, and interdependent, and yet perfectly distinct sciences.

2. They are closely related, inasmuch as mental processes are dependent on the functioning of the nervous and cerebral organism; and, on the other hand, the state of the organism is modified by the mental condition of the person at the time.

3. They are distinct sciences, inasmuch as the two orders of phenomena, mental and physical, are absolutely unlike in every particular. They differ—

(*a*) *In Relation to Movement.*—All physiological processes are reducible at bottom to movement. But thought is not movement, nor does it in any way resemble movement.

(*b*) *In Relation to Measurement.*—Physical processes lend themselves to exact measurement, mental processes do not. Space standards, time standards, intensity standards, are all applicable primarily to the *stimuli*, and only in the most indirect and inexact way, to the resultant mental condition.

(*c*) *In Respect to the Means through which the Phenomena are known.*—Physical phenomena are known by means of the senses; mental phenomena are known immediately in the consciousness of the knowing subject.

(*d*) *In their Essentially Subjective Nature.*—All mental states group themselves round a personal consciousness, whose they are. "It seems as if the elementary psychic fact were not 'thought,' or 'this thought,' or 'that thought,' but 'my thought.'"

(*e*) That active synthesis of the data presented to it, which is characteristic of the mind, and by which it evolves higher products out of those data (out of feelings the percept, out of percepts the concept, etc.) has no parallel in the world of matter.

Note.—Psychology may now be defined as the *science of the phenomena of consciousness.*

CHAPTER V.

The Method of Psychology.

1. Since psychology is a science, its method will be the same as that of all other sciences.

2. Logic is the science of scientific method, and teaches us what the method is of all the sciences, including psychology.

3. Scientific method is divided first into induction and deduction.

4. Induction consists in inferring from particular facts, or from a less general principle, to a more general principle.

5. Deduction consists in inferring from a more general principle, to a less general, or to a particular fact.

6. Induction proceeds by observation and experiment. In observation, the scientist takes instances ready made from the hand of nature. In experiment, he makes his own instances by creating artificial conditions. Astronomy is largely a science of observation; chemistry a science of experiment.

7. Psychology is a science both of observation and experiment. The psychologist observes what is going on in his own mind; and also the outward signs of what is going on in the minds of others. He is also able, to a certain extent, to provide conditions artificially, and to notice the mental result.

CHAPTER VI.

The Field of Psychology.

1. Since psychology is the science of the phenomena of consciousness, its field is co-extensive with the field of consciousness. Wherever mental phenomena are found, there the psychologist is at home.

2. Hence the field of psychology divides first of all into the subjective and objective; the psychologist studies his own mind, and the minds of others. The first he studies directly, by introspection or reflection; the second indirectly.

3. Introspection has been declared impossible. Though not impossible, it is attended with peculiar difficulties: (*a*) Introspection is not the natural mental attitude of men. We are more easily absorbed by what is without and material, than by what is within and spiritual. (*b*) The fleeting character of mental states renders introspection difficult. (*c*) We are apt to confuse the content of consciousness with the inferences which we draw from that content. Error is possible only in the latter. (*d*) Introspection itself is apt to modify the mental state attended to. Think of your pain, and it grows more intense.

4. The objective field of psychology divides conveniently into the following sections.

(*a*) *Race Psychology or Anthropology* :—Here the psychologist studies social customs, religious beliefs, historical and monumental remains, literary and artistic productions, in short, every outward sign of the mental life of the race in the past and present. The advantage of this lies in its breadth or generality.

(*b*) *Child Psychology.*—Here the psychologist studies the outward signs of the mental life of children. The advantage of this lies in the comparative simplicity and naturalness of the phenomena. This study promises valuable results, both for psychology and pedagogy.

(*c*) *Comparative Psychology.*—The study of the mental life of the lower animals often throws light on the operations of human intelligence.

(*d*) *Abnormal Psychology or Mental Pathology.*—Normal mental states are often better understood when we study instances of the departure from the normal, such as are manifested in the various forms of insanity. (Hypnotism, mesmerism, spiritism, telepathy, clairvoyance, etc.)

5. The advantage of the subjective study lies in its directness; that of the objective, in its generality. Introspection is the touchstone by which the results of indirect study are to be tested.

CHAPTER VII.

The Nervous System.

1. The intimate relation between body and mind, makes it necessary for the psychologist to know something of the structure and functions of the nervous system.

2. The cerebro-spinal system comprises the brain, spinal cord and nerves.

3. The brain and cord lie within the cranial and spinal cavities, and are protected by three membranes; Pia Mater (inner), Dura Mater (outer), Arachnoid (middle); the intervening spaces being filled with fluid.

4. The cord is divided by longitudinal fissures into six columns, anterior, lateral and posterior on each side.

5. The cord is composed of white and grey matter, the former being outside, the latter within. The former is fibrous, the latter cellular and fibrous.

6. The medulla oblongata is an enlargement of the cord just below the base of the brain. Here occurs the decussation of the nerve fibres.

7. The brain comprises the cerebellum, or little brain, and the cerebrum, or brain proper.

8. The cerebrum in mature life is full of folds or convolutions and is divided into sections by several fissures, chief of which are Median, Rolando and Sylvius.

9. The grey matter of the brain lies on and near the surface, the white matter below.

10. The spinal nerves pass out of the cord at the posterior and anterior fissures on each side. They gather into bundles to form a nerve, which again ramifies, sending its fibres to the periphery. Those from the posterior fissure proceed to the skin and organs of sense, those from the anterior fissure to the muscles.

11. The functions of the nervous system are two: (*a*) Sentience, the function of the cells, including the capacities of selection among reactions, and retention of impressions; (*b*) Transmission of energy.

12. Nerve fibres are divided into three sorts as regards function; (*a*) *Sensor* courses, conveying sense-impressions from the periphery to the brain; (*b*) *Motor* courses, conveying impulses from the brain to the muscles; (*c*) *Association* courses, connecting the centres with one another.

13. A Sensor course, with its corresponding Association and Motor courses, constitute the Reflex Arc. A sense impression tends always to be followed by a movement. This is the Law of Nervous Dynamogenesis.

14. Viewed from the standpoint of mental worth, these nervous reactions are of three sorts: (*a*) *Automatic*, that is, set on by organic conditions, without conscious oversight; (*b*) *Reflex*, that is, set on by external stimulation, without conscious oversight; (*c*) *Voluntary*, the result of conscious purpose. Inhibition is the voluntary repression of reflex and automatic reactions.

15. The following principles of nervous action are important:

(*a*) Specialization: Certain portions of the brain control certain functions. In general the occipital lobe is sensory, and the temporal lobe motor. Speech seems to depend on the Island of Riel and adjoining convolutions.

(*b*) Substitution: Within certain limits the hemispheres are capable of performing each other's functions. A nerve fibre also may under certain conditions transmit either a sensor or a motor impression.

(*c*) Specific Energy: The nerve of a special sense responds always in the same manner, whatever the nature of the stimulus may be, *e. g.*, stimulation of the optic nerve always gives a sensation of light, whether that stimulation be chemical, electrical or mechanical.

(*d*) Summation of Stimuli: Every stimulus, though insufficient in itself to cause a sensation, produces some effect on the nervous system, and if reinforced by another stimulus, or by the repetition of the same stimulus, a sensation is the result.

16. The physiological basis of Habit consists in the fact just stated, that every nervous process—sensor or motor—leaves some effect behind, predisposing the system to the repetition of that process.

17. The opposite fact, that the nervous system is capable of adapting itself to new conditions by new reactions, constitutes the physiological law of Accommodation, which lies at the foundation of all mental progress.

CHAPTER VIII.

Classification of Mental Phenomena.

1. The analysis of any complex mental state reveals the following elements:

(*a*) The element of feeling, consisting in an affection of the mind, caused by organic stimulation or by a thought of the mind. The former is Sensation, the latter Emotion.

(*b*) The element of cognition or thought, consisting in the mind's interpretation of the data of feeling, or the mind's reference of feeling to objective reality.

(*c*) The element of volition, consisting in the active forthputting of the self for the realization of an ideal, or the attainment of an end.

2. Feeling, thought, and volition, while clearly distinguishable from each other by the qualities mentioned, are yet very closely connected with each other, and interdependent. They are not separate faculties of the mind, but only different phases of the mental life. Sensation furnishes the raw materials for thought to work upon. Emotion depends upon thought for its very existence. The will selects among ends or possible courses of conduct. But this presupposes the presentation of those ends to thought, and their consideration by thought.

3. Moreover, these three are one, in the sense of being the forms of manifestation (phenomena) of one self-conscious subject.

4. On the other hand they are, to a certain extent, antagonistic to one another. Strong feeling prevents clear thinking. Deep thought makes one comparatively indifferent to sense impressions.

5. Provisional definitions of feeling, thought, and volition: Feeling is a mental affection. Thought is the apprehension of relation. Volition is active, deliberate choice by the self.

CHAPTER IX.

General Characteristics of Mental Phenomena.

1. Apart from the class-distinctions mentioned, all mental phenomena are alike in being conscious. Every feeling, thought, and volition is conscious, and occurs in consciousness. Consciousness, therefore, is the common characteristic of all mental states. It is, moreover, the unity of those states; and this unity, taken along with that active synthesis which is manifest everywhere in the mental life, can be explained only by the postulate of a single, active principle, a self or soul.

2. Consciousness is found in all degrees of intensity, the lowest of which is the sub-conscious, and the highest the active focus of attention.

3. The degree of intensity of any state of consciousness varies directly as the amount of attention bestowed upon that state.

4. Attention is vivid, active consciousness. It is not something other than consciousness, but is consciousness intensified.

5. Attention may be involuntary or voluntary. In the former case, attention is captured from without by the intrinsic interest of the subject, or by its overpowering sense-force; in the latter case attention is stimulated from within by an act of will.

6. Again, attention may be sensorial or intellectual. In the former case, the object attended to is something which makes an impression upon the organs of sense; in the latter case the object of attention is an idea in the mind.

7. Attention is a condition of comparative monoideism, accompanied by motor adaption. Attention is difficult in proportion to the degree of concentration. Absolute monoideism is normally an impossibility.

8. Attention intensifies feelings, clarifies thoughts, and renders voluntary movements more prompt and accurate. It depends upon *interest*, either direct or indirect.

9. Attention produces marked effects upon the state of the organism, and upon the action of the vital organs. The circulation of the blood, the movements of respiration, and the contrac-

tion of the muscles, are all influenced by attention. On the other hand, the degree of attention possible, depends partly on the condition of the body, as to fatigue, disease, etc.

10. Morbid states of the attention consist either in an exaggerated monoideism, in which the patient is unable to withdraw his attention from some absorbing theme (*e.g.*, in fixed idea, pre-occupation, hypochondria, hypnosis, ecstacy); or in an exaggerated polyideism, in which the patient is unable to fix his attention upon anything continuously (*e.g.*, in extreme fatigue, intoxication, sleep, hysteria, mania, idiocy).

11. In the development of the individual mind, there gradually emerges the notion of the *self*, as of something other than the external world, other than the body, other than the feelings, thoughts, and volitions which enter into its experience. This is self-consciousness.

12. Self-consciousness, as having a special content, must be distinguished from consciousness in general, which is the common feature of all mental states.

13. Self-consciousness, as a psychological fact, must be distinguished from the self, soul, or ego, as a metaphysical postulate. The former has a history; the latter is the timeless condition of all mental experience.

14. The self is conceived as the unitary subject of manifold experiences, and the permanent subject of fluctuating experiences.

CHAPTER X.

Sensation in General.

1. Sensation should be carefully distinguished: (*a*) from bodily affection, (*b*) from perception, (*c*) from consciousness.

2. Bodily affection is reducible to movement of matter in space; sensation is a condition of consciousness. The two are absolutely unlike.

3. Perception is the mind's interpretation of feelings; sensation is the feeling itself. The two differ as affection and presentation. They are, however, always found together in actuality.

4. Sensations are conscious, but they are not consciousness.

5. Sensation, abstracted from thought, may be considered as the raw material of knowledge. The first step in knowledge is the discrimination of sensations; and this is the work of thought.

6. Sensation may be defined as "*A mental affection, resulting from, and correlative of, changes produced in the living organism.*"

Note (*a*) The word "affection" distinguishes sensation from the higher processes of mind. Sensation is not a mental *presentation*, but simply a mental *affection*.

Note (*b*) The word "mental" distinguishes sensation from organic modification.

Note (*c*) The latter part of the definition calls attention to the fact, that sensation supervenes upon organic change, as thought supervenes upon sensation.

Note (*d*) This definition does not *explain* sensation, but only describes it. That which is simple and ultimate, is incapable of analysis, and, therefore, of explanation.

7. The various senses may be ranked according to the degree in which their processes minister to the intellectual life.

CHAPTER XI.

The Sense of Sight.

1. The physiological apparatus of sight contains the following: *Sclerotic Coat* (the white membrane forming the ball); *Cornea*, (the transparent membrane, taking the place of the sclerotic in front of the eye); *Optic Nerve*, (dividing into two branches for the two eyes); *Retina*, (the sensitive membrane into which the optic nerve distributes itself, covering the back part of the eye inside); *Lens*, (a translucent body near the front of the eye, which by its contractions and expansions adjusts the eye to the distance of the object—*accommodation*); *Iris*, (a diaphragm or curtain in front of the lens having a circular opening (pupil) which by its contractions and expansions adjusts the eye to the *strength* of the

light—*contraction*); *Muscles*, (six for each eye, by means of which the two eyes are raised, lowered or converged, so as to focus upon the object); *Blind Spot*, (where the optic nerve enters the eye, and where there are no rods and cones); *Fovea*, (the centre of clearest vision); *Vitreous Humor*, (a translucent substance filling the globe of the eye); *Aqueous Humor*, (filling the front part of the eye, between the lens and the cornea).

2. The sensibility of any point on the retinal surface is in inverse proportion to the distance of that point from the fovea (roughly speaking).

3. When an object throws its image on a peripheral point of the retina, there is an instinctive tendency to turn the eyes so as to bring that image upon the fovea.

4. Convergence, contraction and accommodation also take place instinctively and involuntarily.

5. The proper object of sight is color. All sensations by the eye are feelings of color.

6. Certain pairs of colors when they fall together upon the retina produce the feeling of white. These are *complementary colors*.

7. Perception of color is less accurate as the distance from the fovea increases. The fovea itself is somewhat less sensitive to color than is its immediate vicinity.

8. Corresponding to each sensation of color (red, green, blue) there is a certain rate of ether-vibration.

9. If the retinal image be very small, if it be far out on the periphery, if the light be extremely weak or extremely strong, or if the eye be color blind, the proper color is not seen, but some shade of grey.

10. Primary colors are those from whose combination all other colors may be produced. Red, green and violet, are primary colors.

11. According to the Young-Helmholtz theory, there are three fibres in each retinal cone, reacting respectively to red, green and violet light.

12. Color blindness on this theory is caused by disease or deformity in one or more of these fibres.

13. After-images are continuations of sensation after the cessation of the stimulation. After-images of sight are positive and negative. The former are continuations of the same sensation; the latter are due to fatigue of the eye and are seen in the complementary color.

14. Sensations of color have three special characters: (*a*) *Tone or quality* (red, green, etc.), depending on the *rate* of ether-vibrations; (*b*) *Intensity*, depending on the *amplitude* of the vibrations; (*c*) *Saturation*, depending on the amount of white in the color.

15. Our perception of the distance, form and size of objects is aided by the following visual data, which we learn to associate with these space properties: (*a*) Feelings connected with the various movements of the eyes (convergence, contraction, accommodation, etc.); (*b*) binocular vision furnishes a compound image of the object; (*c*) the various forms of perspective: lineal, aerial, mathematical.

16. Quantitative investigations in connection with vision yield the following results: (*a*) A certain strength of stimulus is necessary to produce any sensation at all—this is the *threshold* stimulation; (*b*) beyond a certain strength of stimulus no further increase takes place in the intensity of the sensation—this point is the *limit*; (*c*) between these two points Weber's law holds roughly, viz., "In order that the sensation may increase in arithmetical proportion, the stimulus must increase in geometrical proportion;" (*d*) given a sensation of color of any certain intensity, the least increase in the stimulus which will produce a just observable increase in the sensation, bears a constant ratio to the original stimulus.

17. Sight stands very high in the intellectual scale for the following reasons: (*a*) The wide sweep of vision; (*b*) the slight persistency of after-images of sight; (*c*) fine spatial discrimination and accurate localization; (*d*) delicate intensity discrimination (120 : 121); (*e*) the slight hedonic coloring of sight-sensations; (*f*) predominence of sight in perception, memory, imagination.

CHAPTER XII.

The Sense of Hearing.

1. The ear is divided into (*a*) external ear, (*b*) middle ear or tympanum, (*c*) internal ear or labyrinth.

2. The external ear comprises the concha, the external auditory meatus, and the tympannic membrane.

3. The tympanum comprises the eustachian tube, the round foramen, the oval foramen, and the auditory ossicles (malleus, incus, stapes).

4. The labyrinth comprises the semi-circular canals, the vestibule, and the cochlea. In the membranous cochlea are the rods of corti.

5. The physical condition of a sensation of sound consists in vibrations of air communicated through the tympannic membrane, the fluids of the labyrinth, and the rods of corti, to the auditory nerve and the Temporo-Sphenoidal region of the brain.

6. *Tones*, as distinguished from *noises*, have the following sense-qualities: (*a*) pitch, depending on the *rate* of vibration; (*b*) intensity, depending on the *force* of the vibrations; (*c*) timbre, depending on the *composition of the tone*, or the number of overtones, or partial tones, or harmonics, mingled with the fundamental tone.

7. The threshold for pitch is about 16 vibrations per second; the limit, about 40,000 vibrations per second. Discrimination is uncertain, however, below 40 and above 4,000 vibrations per second.

8. The just observable difference in pitch is very small with the practised ear (500 : 501).

9. Regarding intensity, there is a threshold and a limit. The just observable increase in loudness requires a constant increase of one-third of the original stimulus.

10. As to timbre, the ear is very acute in the discrimination of voices, footsteps, etc.

11. The sense of hearing ranks high in the intellectual scale for these reasons: (*a*) It does not require spatial contact; (*b*) it

is free from the disturbing influence of other sensations; (*c*) the after-images pass away very rapidly; (*d*) it discriminates duration and succession with great acuteness: (*e*) the ear is the medium of a peculiarly refined pleasure, as well as of a vast amount of information. Spoken language depends on hearing.

12. Hearing has these two disadvantages: (*a*) air-vibrations are much slower than ether-vibrations; (*b*) *local* discrimination by the ear is not very accurate.

CHAPTER XIII.

The Cutaneous Senses.

1. Tactile corpuscles, or nerve-endings for touch, are found in all parts of the dermis, but not everywhere in the same profusion.

2. Touch furnishes very little information by itself, but in connection with sight and the muscular sense, it gives us such ideas as those of roughness, smoothness, extension, elasticity, etc.

3. The principle of specific energy holds good in touch, as in the other senses. Stimulate a nerve of touch in any way you please, and the psychic result is a feeling of touch.

4. The discriminative delicacy of touch is in proportion to the mobility of the part, the plentifulness of the touch corpuscles, and the habitual use of the part in gaining knowledge. "Sensory circles" vary thus in diameter, from six cm. on the back, to one mm. on the tip of the tongue. The finger tip is twenty-five times as acute as the shoulder.

5. The sense of touch is highly susceptible to education.

6. Touch is more universal in the animal kingdom,—more widely distributed in the individual,—subject to fewer illusions,—less interfered with by after-images,—than any other sense.

7. On the other hand, touch is limited in the range of its information; and very strongly colored by hedonic qualities.

8. That the feeling of pressure is not the same as the feeling of touch is shown first, by the existence of "pressure spots" in the skin, distinct from the tactile corpuscles; and second, by the absence of any constant relation between the discriminative sensibility of touch and pressure in different portions of the skin.

9. That the feeling of pressure is not the same as the muscular sense, is shown by the fact that these feelings may vary independently of each other; and that there may be a feeling of pressure in the absence of muscular feelings (*e. g.*, when weights are laid on one's hand while it rests upon a table).

10. The "least observable difference" by pressure alone, is about one twenty-ninth of the smaller pressure; when pressure and the muscular sense are combined, about one thirty-ninth. Time is an important factor here.

11. The sense of temperature has its own end-organs in the skin, distinct from the touch corpuscles. The principle of specific energy holds good in temperature.

12. The "least observable difference" in the sense of temperature is about one-fourth of a degree centrigrade.

13. The sense of temperature furnishes valuable information connected with the preservation of life; but its intellectual rank is comparatively low, for these reasons; (*a*) Feelings of this sense are relative to the condition of the organism, (*b*) the hedonic element is very prominent.

CHAPTER XIV.

Smell and Taste.

1. The sense of smell, more than any other, requires *change* as the condition of its operation. Olfactory sensibility quickly becomes fatigued.

2. The threshold for smell is exceedingly low. Three one-hundred-millionths of a grain of musk can be detected.

3. There are only four primary taste sensations: sweet, sour, bitter, salt. Sweet seems to stand opposed to sour and to bitter, but not to salt.

4. The chemical composition of substances gives no explanation of the fact of taste, nor of the different tastes of different substances.

5. The threshold in taste is low. In a solution of 1 part of quinine to 33,000 parts of water, the quinine can be detected.

6. Smell and taste rank low in the intellectual scale for these reasons: (*a*) They lack distinctness; they are implicated with each other, and with other senses; (*b*) they persist after the removal of the stimulus; (*c*) the hedonic element is very prominent; (*d*) they are subject to many fluctuations.

CHAPTER XV.

Muscular and Organic Sensations.

1. Muscular sensations are those which accompany muscular movement. They have been divided into kinaesthetic feelings, and feelings of innervation; the former resulting from muscular tension, the latter consisting of the feeling of out-going nervous energy. The existence of innervation feelings has been denied.

2. The muscle sense is of very great importance in the intellectual life. It is closely connected with the volitional side of life. It co-operates with sight and touch to give us some of our most fundamental ideas of the external world, and of the most essential properties of material things.

3. The just observable difference for this sense is, for moderate weights, about one-nineteenth of the smaller weight.

4. The organic sensations comprise all those vague, diffuse feelings which accompany the action of the vital organs and the states of the organism as a whole (*e.g.*, hunger, suffocation, etc.). Their most marked quality is pleasure and pain.

CHAPTER XVI.

Perception.

1. Perception may be defined as *the mind's interpretation of sensations, as signs of a present reality;* or as the apprehension of the relations of sensations. It is the knowledge of real external things, gained by means of sensations.

2. Perception is an activity of the mind by which the data of sensation are unified into a perceived object.

3. Perception is concerned primarily with the individual and not with the general. It is the knowledge of an *individual object now present to sense.*

4. Perception is concerned primarily with the concrete, and not with the abstract.

5. Perception is not immediate, but mediate. There is an element of inference in it. In perceiving an orange I am not immediately cognizant of the orange, but only of the sensations of sight, smell, etc. I *infer* the presence of the orange.

6. Perception involves space and time. These are not objects perceived, but the forms of all perception. Perception consists in a synthesis of sensations under the spatial and temporal forms.

7. The actual space-properties of any individual object (*e.g.*, its size, position, etc.), are learned by sense experience; but all such properties presuppose space.

8. Perception should be distinguished from the percept. The former is the process, the latter is the product or result of that process. Perception is the mind's act in knowing a thing, percept is the thing as known.

9. Sensation furnishes the data for perception. Perception is the mind's apprehension of the space and time relations of sensations.

10. Analysis of the perceptive process yields the following stages: (*a*) discrimination, (*b*) localization, (*c*) integration.

11. The first step in knowledge is discrimination, with its correlative, assimilation. Sensations are known as like and unlike. The red is distinguished from the blue, and from the sweet; and

at the same time an element of identity is apprehended in them.

12. The second step is localization. A definite spatial reference of the sensations takes place, 1st, to the part of the body to which the stimulus is applied; and 2nd, to the object from which the stimulus proceeds.

13. The third step in perception is integration. This means the final unification of the manifold of sensation into one whole which we call an object.

14. Perception being an active synthesis of elements, some of which are present and some absent, the mind which perceives must be characterized by activity, unity, and continuity. The unity of the percept is not given to, but constructed by, intelligence.

15. Perception developes in promptness and accuracy during the life of the individual, and probably also during the life of the race. The perceptions of the young child are lacking in these qualities.

16. The development of perception is furthered by the various "local signs" involved in sense experience.

CHAPTER XVII.

Representation.

1. Presentation is knowledge of things in the presence of the things. Representation is knowledge in the absence of the things.

2. Presentations and representations differ in degree rather than in kind. This is shown by the following facts: (*a*) Analysis of both reveals no essential difference in the nature of the conscious content in the two cases; (*b*) the physiological accompaniments are the same in both; (*c*) the emotional accompaniments are also the same; (*d*) representations, when very strong, are often mistaken for presentations.

3. Representation includes memory, imagination, and association of ideas.

CHAPTER XVIII.

Memory.

1. Memory depends on perception, as perception depends on sensation. In perception we apprehend the relations of sensations. In memory we apprehend the relations of perceptive experiences. But these relations are in the former case mostly spatial; in the latter case, mostly temporal.

2. Memory differs from perception also, in that its object is not present, but recalled or represented.

3. Memory has two forms, (*a*) Reminiscence or passive memory (by which past events come again into consciousness without volition); (*b*) recollection or active memory (by which the mind purposively recalls the past). This active memory proceeds always indirectly by association of ideas.

4. The memory of an experience is clear and full in proportion to: (*a*) The vigor and health of the physical organism; (*b*) the intensity of the sense experience; (*c*) the interest that has attached to it; (*d*) the degree in which attention has been concentrated upon it; (*e*) the number of times it has been repeated; (*f*) the extent to which the whole matter has been "reconstructed" actively and independently by the remembering subject. *The secret of memory lies in the consolidation and enlargement of the associative context of that which is to be remembered.*

5. Analysis of the act of memory yields the following stages: (*a*) Retention (*i.e.*, the physiological condition of memory. Every experience impresses the brain substance; the impression persists for a certain time, and renders the return of ideas possible); (*b*) reproduction (*i.e.*, the actual return of the image to consciousness). (*c*) recognition (*i.e.*, the reapprehension of the relations of the image thus revived).

6. Memory may, therefore, be defined as *the representation of a past experience, and the recognition of it as having formerly occurred in our experience.*

7. Memory, therefore, presupposes four things: (*a*) perceptive experiences; (*b*) a permanent, active subject, to bring up the

past and know it as his past; (*c*) belief on the part of this subject that what is now represented was formerly presented in his experience; (*d*) time, as the mental form under which recognition takes place.

8. Abnormal conditions of memory are produced by a variety of causes, both physical and mental; and may be classified as follows: (*a*) amnesia or memory decay (as in old age); (*b*) hypermnesia, or the intensifying of memories (as in the unexpected recall of long forgotten events in delirium, or strong excitement); (*c*) pseudomnesia, or the creation of false memories (as in the insane, who "remember" what never happened).

CHAPTER XIX.

Association.

1. By association is meant that connection or relation of ideas, by which they suggest each other, or call each other up into consciousness. ("Idea" here = "mental phenomenon.")

2. The physiological basis of association consists in the fact that brain processes which occur together, develop connections, so that, when one recurs, it tends to propagate its excitement into the other.

3. The mental laws of association are contiguity, similarity, contrast.

4. *Contiguity.*—If a number of ideas have been in the mind together, when one of these recurs, the others tend to recur with it.

5. *Similarity.*—Ideas of similar things tend to call each other into consciousness.

6. *Contrast.*—Ideas of contrasted things tend to call each other into consciousness. It is evident that, in contrasted things there must be an element of similarity, and in similar things an element of difference.

7. The fundamental principle of association, underlying all these laws, may be stated thus: *when a part of an old mental*

movement is in any way restored, the entire movement tends to reinstate itself.

8. Objects and events in the real world are associated either in the way of co-existence, or in the way of succession. Ideas in the mind are always associated in succession.

9. The conditions of a prompt and certain association of ideas are the same as the conditions of a perfect memory (*q.v.*).

CHAPTER XX.

Imagination.

1. Imagination is that power of mind by which old sense material is represented in new forms.

2. It depends on sense-experience for its materials; and its sphere is therefore coincident with that of perception. Imagination creates nothing, it only combines in new forms the old sense-material.

3. Imagination differs from memory in the absence of recognition and belief.

4. Imagination differs from conception in the fact that it is concerned with the concrete and individual, while conception deals with the abstract and general.

5. All the senses furnish material for the imagination, the sense of sight probably in a preponderating degree in most persons.

6. Imagination has two forms: (*a*) passive (as in reverie and dreams, where images come and go, combine and separate, by the operation of the laws of association, without volitional interference); (*b*) constructive (where images are purposively combined, with a definite end in view, those combinations selected which suit the end, and those rejected which are unsuitable).

7. The constructive imagination is scientific or aesthetic. In the former case the sole end is the attainment of truth, or the enlargement of the sum of knowledge; in the latter, the end is the gratification of the feeling of the beautiful in some of its forms.

CHAPTER XXI.

Discursive Thought.

1. All intellectual activity consists essentially in the *apprehension of relations.* Conception, judgment and reasoning differ from other intellectual processes and from each other only in the complexity and abstractness of the relations apprehended.

2. Conception is that mental activity by which the relations of percepts are apprehended. It is the synthesis of percepts, as perception is the synthesis of sensations.

3. The concept is the product of conception. It has two forms: (*a*) The general notion, or the thought of a class of objects, as a class; (*b*) the abstract idea, or the thought of the qualities common to all the members of a class, and on the basis of which the classification has proceeded.

4. The concept is developed and defined by degrees in the course of experience. This development of the concept involves two processes, the one in intension, the other in extension: (*a*) Abstraction, which includes the elimination from the notion, of those qualities which do not belong to it, and the incorporation into the notion of those which do belong to it; (*b*) generalization, which involves the inclusion into the class of those objects which belong to it, and the exclusion of those which do not.

5. The content of a general notion, or of an abstract idea, is not concrete or individual, and cannot, therefore, be represented in the imagination.

6. The general name or term is the expression in language of a concept. General language serves to facilitate and abbreviate the processes of thought and to give definiteness and fixity to the general notion.

7. Judgment is involved at every stage in the development of the concept, and even in the perception of an object.

8. Judgment may be defined (*a*) From the standpoint of logic, as the mental assertion of the relation of concepts; (*b*) from the psychological standpoint as the mental assertion of the relation apprehended at any stage of the process of conception.

9. The law of identity dominates the judgment. While the concept is enlarged and modified by the incorporation and elimination of qualities, it still remains identical with itself throughout the process.

10. *Judgment is the apprehension of the relation of concepts*, as conception is the apprehension of the relation of percepts. Judgment may be called explicit conception; conception, implicit judgment.

11. Judgments may be classified in several ways: (*a*) With reference to quantity, they are *universal* and *particular;* (*b*) with reference to quality, they are *affirmative* and *negative;* (*c*) with reference to the intensive relation of subject and predicate, they are *analytical* and *synthetical;* (*d*) with reference to the belief-attitude of the mind, they are *categorical* and *hypothetical.*

12. Reasoning is the most advanced stage of discursive thought. It is the mind's activity in passing from data in the form of judgment, to a conclusion also in the form of a judgment. It is, therefore, *a synthesis of judgments*, as judgment is a synthesis of concepts, and conception a synthesis of percepts. It is essentially a process of inference.

13. Inference should be distinguished from intuition. The latter is *immediate* knowledge (*e.g.*, the axioms, etc.); the former is *mediate* knowledge, or knowledge obtained by a process (*e.g.*, the conclusion of a syllogism).

14. Reasoning is inductive and deductive. In the former case the conclusion is more general than the premises; in the latter case, it is less general. The premises constitute the ground, or sufficient reason, for the conclusion.

CHAPTER XXII.

Illusion.

1. Illusion is a mistaken inference from the content of consciousness to matters of objective fact. Belief may be present or absent. In the former case the illusion is delusional.

2. Since illusion is possible wherever there is inference, we shall find illusions of perception, of memory, and of discursive thought.

3. Illusion of perception consists in a mistaken interpretation of sensations.

4. Illusion of memory consists in a distorted idea of a past experience.

5. Illusions of discursive thought are the logical fallacies.

6. The grounds of the possibility of illusion are the following: (*a*) The fact of inference; (*b*) the ambiguity of sensation; (*c*) the similarity of presentation and representation; (*d*) diseased or fatigued conditions of the organism; (*e*) mental tendencies of various sorts, such as the tendency to believe what we desire, what we fear, what we hope, what we expect, what is asserted positively, or suggested powerfully.

7. Illusions are classified into illusion proper, and hallucination. In the former case, there is a real objective basis for the idea, but the interpretation is wrong; in the latter, there is no objective basis, but the idea is a pure projection of the imagination. Hallucination is more common among the insane.

CHAPTER XXIII.

Emotion.

1. Feeling is the most primordial, the most widely distributed, and the most difficult to define, of all mental phenomena.

2. The most common characteristics of all feelings are; (*a*) some degree of agitation; (*b*) some degree of pleasure or pain.

3. The pleasurableness or painfulness of a feeling is not absolute, but relative, depending on the amount of experience, the nature of the preceding experience, the state of the organism, the intensity of the feeling, the mood of the person, the associated interests, etc. This is the law of relativity.

4. Pleasant states of feeling are connected with an increase of vital energy, and so favor the repetition of the actions which caused them; painful states of feeling are connected with a

decrease of vital energy, and so favor the repression of the actions which caused them. This is the law of conservation.

5. Feeling is divided into sensation and emotion. The former has an external, the latter an internal cause. (Note: "Internal" here means "mental"; "external" means "non-mental".) Emotion may be defined as *feeling caused by mental states.*

6. Each form of mental activity, therefore, has its corresponding emotional accompaniment. There are emotions of presentation, of representation, and of elaboration.

7. Emotions of presentation are those feelings which arise in consequence of the thought activity of perception. More briefly, feelings caused by percepts, (*e.g.*, the sight of a beautiful landscape causes a feeling of pleasure).

8. Emotion of representation are those feelings which arise in consequence of the thought activity of memory and imagination. More briefly, feelings caused by images.

9. Emotions of elaboration are those feelings which arise in consequence of the thought-activity of conception, judgment and reasoning. More briefly, feelings caused by discursive thought.

10. Emotions of representation may be divided into two classes, according as the images are connected with the ego or with the non-ego.

11. Feelings connected with the ego (subjective emotions), are feelings of self-appreciation or self-depreciation, according to the nature of the images.

12. Feelings connected with the non-ego (objective emotions), are feelings caused by the thought of objects or of the actions of others, *e.g.*, fear is the feeling caused by the thought of an object as dangerous; anger is the feeling caused by the thought of objects or actions as unjust or injurious; sympathy is the feeling caused by the thought of the pleasure or pain of another; grief is the feeling caused by the thought of disaster or loss.

13. Emotions of elaboration comprise logical, ethical, æsthetic and religious feelings.

14. Logical emotions, or the feelings of the true, are those feelings aroused by the thought of the conclusive, the satisfactory, the reasonable, and their opposites.

15. Ethical emotions, or the feelings of the good, are those feelings aroused by the thought of right or wrong. These moral qualities can attach only to the free actions of persons, performed in conscious harmony or disharmony with a moral ideal. The former arouse the feeling of moral approval, the latter the feeling of moral disapproval.

16. Æsthetic emotions, or the feelings of the beautiful, are the feelings aroused by the thought of such qualities as unity amid variety, harmony, symmetry, sublimity (greatness, power, beauty), and the like.

17. Religious emotions are those feelings which arise out of the thought of the character of the Deity, and our relation to Him. The thought of His greatness and power causes the emotion of awe; that of His wisdom, the emotion of reverence; that of His love and mercy, the emotion of answering love and trust.

CHAPTER XXIV.

Volition.

1. Volition differs from feeling and thought in an important respect. The feeling subject is *affected by* the external world; the thinking subject is *cognising* the external world; the willing subject is *putting himself forth into the world* to bring about some change therein.

2. This means that in every real volition, an effort is being put forth for the realization of an ideal or the attainment of an end. The subject is no longer a passive unit, but an active cause.

3. Upon the fact of volition the possibility of ethics depends. Ethics is the philosophy of ideals; volition is effort to realize ideals. Ethics is the science of right and wrong; volition is the only thing that can be right or wrong.

4. The motor consciousness has three principal phases, differing widely in moral worth, viz., the automatic, the reflex, and the voluntary.

5. Automatic movements are produced by habits, native impulses and organic conditions. Physiologically they consist in processes of the motor nerves and the muscles. They are not foreseen or intended by the mind; and they come into consciousness only during or after their performance.

6. Reflex movements are produced by sensations, suggestions and conditions which appeal to instinct (in a word by "affects"). They resemble automatic movements in every respect, except that they are stimulated from the environment.

7. Voluntary movements (actions) are the outcome of conceived and desired ends, *i.e.*, of motives. "Affects" never determine a voluntary act; but the self-conscious subject, holding the various ends (*i.e.*, possible courses of conduct) before the mind's view, selects one on account of its desirableness, identifies himself with it, and thus makes a motive of it.

8. Voluntary actions are therefore determined by the self-conscious subject with reference to an ideal of the good.

9. Will is not a "faculty" or power separable in any real sense from the personality of the subject. The will is the person considered as choosing.

10. Volition is an act of choice in which the self-conscious subject puts himself forth in conscious effort towards the realization of an end, in which, for the time, his good is conceived to lie.

11. Volition is not organic movement, but the inner spiritual choice, upon which organic movement may supervene.

12. Volition requires self-consciousness. A subject capable of holding various ends together in consciousness, and deciding that one is more conducive to his good than another, must be capable of distinguishing himself from the ends in view.

13. *A motive is an end thought as desirable.* There is, therefore, no such thing as unmotived volition, for the volition is simply the choice, by the subject, of an end, which he has already thought as desirable. Motive naturally issues in volition and gives to the volition its character.

14. Motive is, therefore, not a feeling, but a thought; and volition is not the result of a struggle among feelings, but the forth-

putting of the self towards the realization of a conceived and desired end.

15. Deliberation is an act of will. The subject is not "prevented from deciding by the equal strength of opposing feelings;" but he decides to postpone his decision and consider further the respective claims of the presented ends.

16. That activity of mind by which the subject compares and relates the presented ends, with the view of choosing between them, is sometimes called volitional apperception.

17. Resolve or intention differs in no way from volition except that the end has a time quality. The subject selects an end which is to issue in a volition at some future time.

18. Choice and volition are synonymous terms.

19. Moral choice is volition, involving considerations of right and wrong.

20. Character is essentially volitional. A man *is* what he habitually and preferentially *does*.

21. One's character is influenced by three things: (*a*) hereditary endowment; (*b*) social environment; (*c*) voluntary choices of the subject himself.

22. The influence of heredity is very great; but *tendencies* only and not *actions* are transmitted. Endowment, therefore, is not character.

23. The influence of one's social environment is exceedingly great, especially in childhood; but it can do no more than furnish considerations and suggestions. It does not make character.

24. Actions alone make character. Repeated acts of volition form habits and preferences, and the outcome of these is character.

25. The principal intuitions connected with the volitional life are: (*a*) Power or cause; (*b*) duty or obligation.

26. There are two wrong ways of stating the problem of freedom.

27. First, the view that, in order to have freedom, volition must be uncaused. This is impossible. The word "cause" is misleading; but there must be a sufficient reason for every volition.

28. Secondly, the view that volition is an event, and like other events must follow from some preceding event as its effect. It is misleading thus to apply physical analogies to the mental life.

29. There is no volition without motive, but this does not destroy freedom, since both motive and volition are the expression of the one self-conscious subject, who identifies himself with a certain end. Motive and volition are not related as cause and effect, but as stages in every complete activity of the self-conscious subject.

30. An objection may be made: "Granting that the subject makes his own motive and volition, must he not, in so doing, act in accordance with his nature, that is, his character, and if so, how can he be free?"

Answer: This is the very essence of freedom. The predicate "free" cannot be attached to any action which does not express the character of the doer. Freedom is involved in self-determination and self-expression.

31. Freedom is the only hypothesis which accounts for such facts as the consciousness of responsibility, obligation, shame, remorse, apology, conscience, etc. In short, unless I be free, all distinction of right and wrong, and all injunctions to seek the one and avoid the other, are unmeaning.

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